PD CEN/TS 16892:2015

BSI Standards Publication

Plastics — Welding of thermoplastics — Specification of welding procedures

bsi.

...making excellence a habit.™

Document Sharing Hub

National foreword

This Published Document is the UK implementation of CEN/TS 16892:2015.

The UK participation in its preparation was entrusted to Technical Committee PRI/80, Welding thermoplastics.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015. Published by BSI Standards Limited 2015

ISBN 978 0 580 89466 4

ICS 25.160.10

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 December 2015.

Amendments issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: PD CEN/TS 16892:2015

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 16892

December 2015

ICS 25.160.10

English Version

Plastics - Welding of thermoplastics - Specification of welding procedures

Plastiques - Soudage des matériaux termoplastiques - Spécification de modes opératoires de soudage

Kunststoffe - Schweißen von thermoplastischen Kunststoffen - Anforderung von Schweißverfahren

This Technical Specification (CEN/TS) was approved by CEN on 13 November 2015 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2015 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. CEN/TS 16892:2015 E

Documents
Document Sharing Hub

Full document details: PD CEN/TS 16892:2015

Contents

Page

European foreword ... 3

1 Scope ... 4

2 Normative references ... 4

3 Terms and definitions ... 4

4 Technical content of welding procedure specification (WPS) ... 5

4.1 General ... 5
4.2 Related to the welding organization ... 5
4.3 Related to the parent material(s) ... 5
4.3.1 Parent material(s) type ... 5
4.3.2 Parent material(s) dimensions ... 6
4.4 Common to all welding procedures ... 6
4.4.1 Joint preparation ... 6
4.4.2 Welding process ... 6
4.4.3 Joint design ... 6
4.4.4 Welding position ... 6
4.4.5 Ambient temperature ... 6
4.5 Specific to a welding process ... 6
4.5.1 Hot gas round nozzle and high speed nozzle welding ... 6
4.5.2 Heated tool butt welding ... 7
4.5.3 Extrusion welding ... 7
4.5.4 Solvent socket welding ... 8
4.5.5 Heated tool wedge welding ... 8
4.5.6 Hot gas wedge welding ... 8
4.5.7 Socket fusion ... 8
4.5.8 Electrofusion socket ... 9
4.5.9 Electrofusion saddle ... 9

Annex A (informative) **Welding Procedure Specification (WPS) - Hot gas round nozzle and high speed nozzle welding** ... 10

Annex B (informative) **Welding Procedure Specification (WPS) - Heated tool butt welding** ... 11

Annex C (informative) **Welding Procedure Specification (WPS) - Extrusion welding** ... 12

Annex D (informative) **Welding Procedure Specification (WPS) - Solvent socket welding** ... 13

Annex E (informative) **Welding Procedure Specification (WPS) - Heated tool wedge welding** ... 14

Annex F (informative) **Welding Procedure Specification (WPS) – Hot gas wedge welding** ... 15

Annex G (informative) **Welding Procedure Specification (WPS) – Socket fusion welding** ... 16

Annex H (informative) **Welding Procedure Specification (WPS) – Electrofusion socket welding** ... 17

Annex I (informative) **Welding Procedure Specification (WPS) – Electrofusion saddle welding** ... 18

Bibliography ... 19

Documents
Document Sharing Hub
Full document details: PD CEN/TS 16892:2015

European foreword

This document (CEN/TS 16892:2015) has been prepared by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by NBN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Documents
Document Sharing Hub
Full document details: PD CEN/TS 16892:2015

1 Scope

This Technical Specification provides guidance for the minimum content of welding procedure specifications for the following welding processes:

— hot gas welding: round nozzle, high speed nozzle, wedge;

— extrusion welding;

— heated tool welding: butt, socket, wedge;

— solvent welding: socket;

— electrofusion welding: socket, saddle.

This Technical Specification applies to the welding of the following products and semi-finished products made of thermoplastic materials:

— sheet;

— pipe;

— fittings;

— lining membrane.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 6947, *Welding and allied processes - Welding positions (ISO 6947)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
welding procedure
specified course of action to be followed in making a weld, including the welding process(es), reference to materials, welding consumables, preparation, preheating (if necessary), method and control of welding and necessary equipment to be used

3.2
welding process
technique characterized by the method of softening to obtain permanent assembly

3.3
welding procedure specification
WPS
document that has been qualified and provides the required variables of the welding procedure to ensure repeatability during production welding

3.4
work instruction
simplified welding procedure specification (WPS), suitable for direct application

Documents
Document Sharing Hub
Full document details: PD CEN/TS 16892:2015

3.5
welding procedure qualification record
WPQR
record comprising all necessary data needed for qualification of a welding procedure specification

3.6
welding consumable
materials consumed in the making of a weld, including filler material

3.7
essential variable
welding condition that influences the quality of the welded joint and requires qualification

3.8
non essential variable
welding condition addressed in the WPS, but not requiring qualification

3.9
parent material
parts to be joined by welding

3.10
welding organization
organization responsible for the welding production

4 Technical content of welding procedure specification (WPS)

4.1 General

A Welding Procedure Specification (WPS) shall provide all the necessary information required to make a weld.

The minimum information required in a WPS is given in 4.2 to 4.5.

Welding procedure specifications cover a certain range for each essential / non-essential variable.

A work instruction can be prepared for each specific job as part of detailed production planning.

Examples of the WPS format are shown in Annexes A, B, C, D, E, F, G, H, I.

The procedure for measuring each variable should be according to agreed specifications.

4.2 Related to the welding organization

— Identification of the welding organization;

— WPS number;

— Welding Procedure Qualification Record (WPQR) number, if applicable;

— signature of the person responsible for approval, appointed by the welding organization.

4.3 Related to the parent material(s)

4.3.1 Parent material(s) type

— Designation of the material(s) and reference standard(s), if any.

An alternative identification shall be used if a reference standard does not exist.

Documents
Document Sharing Hub

Full document details: PD CEN/TS 16892:2015

4.3.2 Parent material(s) dimensions

— Thicknesses (Standard Dimension Ratio (SDR) for pipes and spigot fittings);

— nominal diameters (for pipes and fittings).

4.4 Common to all welding procedures

4.4.1 Joint preparation

— Cutting and surface preparation method (e.g. machining or scraping);

— initial cleaning (chemical or mechanical);

— jigging, fixtures, clamping.

4.4.2 Welding process

4.4.3 Joint design

— Joint and weld type;

— a sketch of the joint design/configuration and dimensions or reference to standards which provide such information.

4.4.4 Welding position

— Welding positions (in accordance with EN ISO 6947, where applicable).

4.4.5 Ambient temperature

4.5 Specific to a welding process

4.5.1 Hot gas round nozzle and high speed nozzle welding

— Initial joint geometry;

— weld rod/wire [cross-section geometry, e.g. round, triangular, designation of the material(s) and reference standard(s), dimensions (size)];

— welding speed;

— gas type;

— backing (method and type of backing, backing material and dimensions);

— nozzle diameter;

— gas flow rate;

— gas temperature;

— torch angle;

— rod/wire angle;

— distance between gas nozzle and workpiece (round nozzle welding only);

Documents
Document Sharing Hub
Full document details: PD CEN/TS 16892:2015